WHAT IS CLAIMED IS:

1. The use of a block copolymer, at least one block of which comprises phosphate and/or phosphonate functional groups, said copolymer optionally being dissolved in a solvent, such as an organic solvent, water or a water/alcohol mixture, to produce, on a metal surface, a deposited layer which increases the affinity of said surface with respect to water.

2. The use of a block copolymer, at least one block of which comprises phosphate and/or phosphonate functional groups, said copolymer optionally being dissolved in a solvent, such as an organic solvent, water or a water/alcohol mixture, to render a surface with a hydrophobic nature compatible with its environment with a hydrophilic nature.

3. The use as claimed in claim 2, characterized in that the surface with a hydrophobic nature is a fiber.

4. The use of a block copolymer, at least one block of which comprises phosphate and/or phosphonate functional groups, said copolymer optionally being dissolved in a solvent, such as an organic solvent, water or a water/alcohol mixture, to produce, on a metal surface, a deposited layer which

renders effective and lasting a subsequent application of a composition (F) to said metal surface.

5. The use of a block copolymer, at least one block of which comprises phosphate and/or phosphonate functional groups, said copolymer optionally being dissolved in a solvent, such as an organic solvent, water or a water/alcohol mixture, to produce, on a metal surface, a deposited layer which protects said metal surface from corrosion.

6. The use as claimed in any one of the preceding claims, characterized in that the deposited layer based on said block copolymer is produced by applying, to said metal surface, a solution comprising this block copolymer or by immersing said metal surface in a solution based on the block copolymer, and by then at least partially removing the solvent initially present in this solution.

7. The use as claimed in any one of the preceding claims, characterized in that the metal surface is a surface based on an element of the Periodic Table of the Elements chosen from the group of the alkali metals or alkaline earth metals, the transition metals, aluminum, gallium, indium, thallium, silicon, germanium, tin, lead, arsenic, antimony, bismuth, tellurium, polonium or astatine, and their oxides or their alloys.

8. The use as claimed in any one of the preceding claims, characterized in that the metal surface is a surface based on aluminum, duralumin, zinc, tin, copper, copper alloys, such as bronze or brass, iron, steel, optionally stainless or galvanized, silver or vermeil.

9. The use as claimed in any one of the preceding claims, characterized in that the deposited layer of block copolymer is produced in the form of a continuous film.

10. The use as claimed in any one of the preceding claims, characterized in that the block comprising phosphate and/or phosphonate functional groups is a homopolymer based on a monomer comprising phosphate or phosphonate functional groups.

11. The use as claimed in any one of claims 1 to 9, characterized in that the block comprising phosphate and/or phosphonate functional groups is a random polymer based on at least one monomer comprising one or other of these phosphate or phosphonate functional groups or their mixtures in an amount of between 0.1 and 100% by weight of said monomers with respect to the total weight of the block.

12. The use as claimed in claim 11, characterized in that the amount of said monomers is between 0.5% and 50% by weight of said monomers with respect to the total weight of the block.

13. The use as claimed in either one of claims 11 and 12, characterized in that the amount of said monomers is between 2% and 20% by weight of said monomers with respect to the total weight of the block.

14. The use as claimed in any one of claims 10 to 13, characterized in that the proportion by mass of the anchoring block with respect to the total weight of the block copolymer of the present invention varies between 90:10 and 10:90.

15. The use as claimed in any one of claims 10 to 14, characterized in that the monomer comprising phosphate or phosphonate functional groups is chosen from:

- N-methacrylamidomethylphosphonic acid ester derivatives, in particular the n-propyl ester (RN 31857-11-1), the methyl ester (RN 31857-12-2), the ethyl ester (RN 31857-13-3), the n-butyl ester (RN 31857-14-4) or the isopropyl ester (RN 51239-00-0), and their phosphonic monoacid and diacid derivatives, such as N-methacrylamidomethylphosphonic diacid (RN 109421-20-7),
- N-methacrylamidoethylphosphonic acid ester derivatives, such as N-methacrylamidoethylphosphonic acid dimethyl ester (RN 266356-40-5) or N-methacrylamidoethylphosphonic acid di(2-butyl-3,3-dimethyl) ester (RN 266356-45-0), and their phosphonic monoacid and diacid derivatives, such as

N-methacrylamidoethylphosphonic diacid (RN 80730-17-2),

- N-acrylamidomethylphosphonic acid ester derivatives, such as N-acrylamidomethylphosphonic acid dimethyl ester (RN 24610-95-5), N-acrylamidomethylphosphonic acid diethyl ester (RN 24610-96-6) or bis(2-chloropropyl) N-acrylamidomethylphosphonate (RN 50283-36-8), and their phosphonic monoacid and diacid derivatives, such as N-acrylamidomethylphosphonic acid (RN 151752-38-4),
- the vinylbenzylphosphonate dialkyl ester derivatives, in particular the di(n-propyl) (RN 60181-26-2), di(isopropyl) (RN 159358-34-6), diethyl (RN 726-61-4), dimethyl (RN 266356-24-5), di(2-butyl-3,3-dimethyl) (RN 266356-29-0) and di(t-butyl) (RN 159358-33-5) ester derivatives, and their phosphonic monoacid and diacid alternative forms, such as vinylbenzylphosphonic diacid (RN 53459-43-1),
- diethyl 2-(4-vinylphenyl)ethanephosphonate (RN 61737-88-0),
- dialkylphosphonoalkyl acrylate and methacrylate derivatives, such as 2-(acryloyloxy)ethylphosphonic acid dimethyl ester (RN 54731-78-1) and 2-(methacryloyloxy)ethylphosphonic acid dimethyl ester (RN 22432-83-3), 2-(methacryloyloxy)methylphosphonic acid diethyl ester (RN 60161-88-8), 2-(methacryloyloxy)methylphosphonic acid dimethyl ester

(RN 63411-25-6), 2-(methacryloyloxy)propylphosphonic acid dimethyl ester (RN 252210-28-9), 2-(acryloyloxy)methylphosphonic acid diisopropyl ester (RN 51238-98-3) or 2-(acryloyloxy)ethylphosphonic acid diethyl ester (RN 20903-86-0), and their phosphonic monoacid and diacid alternative forms, such as 2-(methacryloyloxy)ethylphosphonic acid (RN 80730-17-2), 2-(methacryloyloxy)methylphosphonic acid (RN 87243-97-8), 2-(methacryloyloxy)propylphosphonic acid (RN 252210-30-3), 2-(acryloyloxy)propyl-phosphonic acid (RN 254103-47-4) and 2-(acryloyloxy)ethylphosphonic acid,

- vinylphosphonic acid, optionally substituted by cyano, phenyl, ester or acetate groups, vinylidene-phosphonic acid, in the sodium salt form or the form of its isopropyl ester, or bis(2-chloroethyl)vinyl-phosphonate;

and their phosphate analogs, and

- acrylates or methacrylates of polyethylene glycol omega phosphates or acrylates or methacrylates of polypropylene glycol omega phosphates.

16. The use as claimed in one of the preceding claims, characterized in that the block copolymer employed is obtained as the result of a controlled radical polymerization process preferably using, as control agent, one or more compounds chosen from dithioesters, thioethers-thiones, dithiocarbamates

and xanthates, said polymerization being carried out in particular under bulk conditions, in a solvent or in an aqueous emulsion, so as to directly obtain the copolymer in the form of a solution in a solvent, such as an organic solvent, water or a water/alcohol mixture.

17. The use as claimed in claim 16, characterized in that the solution of block copolymer has a content of between 0.01 and 50% by mass, this content being expressed with respect to the total mass of the solution.

18. The use as claimed in claim 17, characterized in that the solution of block copolymer has a content of between 0.05 and 10% by mass, this content being expressed with respect to the total mass of the solution.

19. The use as claimed in either of claims 17 and 18, characterized in that the solution of block copolymer has a content of between 0.1 and 5% by mass, this content being expressed with respect to the total mass of the solution.

20. The use as claimed in any one of claims 17 to 19, characterized in that the block copolymer is deposited in the form of a film with a thickness of between 10 nm and 1 μm.

21. A process for the application of a film-forming composition (F) to a metal surface, comprising the following stages:

(A) a formulation optionally comprising a solvent, such as an organic solvent, water or a water/alcohol mixture, comprising a block copolymer, at least one block of which comprises phosphate and/or phosphonate functional groups, is applied to said surface, so as to form, on said surface, a deposited layer in the form of a continuous coat; and

(D) the solvent is at least partially removed from the deposited layer obtained in stage (A); and

(E) said film-forming composition (F) is applied to the surface, thus modified, obtained in stage (B).

22. The process as claimed in any one of the preceding claims, characterized in that the metal surface is a surface based on an element chosen from the group of the alkali metals or alkaline earth metals, the transition metals, aluminum, gallium, indium, thallium, silicon, germanium, tin, lead, arsenic, antimony, bismuth, tellurium, polonium or astatine, and their oxides or their alloys.

23. The process as claimed in any one of the preceding claims, characterized in that the metal

surface is a surface based on aluminum, duralumin, zinc, tin, copper, copper alloys, such as bronze or brass, iron, steel, optionally stainless or galvanized, silver or vermeil, or on their mixtures.

24. The process as claimed in any one of the preceding claims, characterized in that the deposited layer based on said block copolymer is produced by applying, to said metal surface, a solution comprising this block copolymer or by immersing said metal surface in a solution based on the block copolymer, and by then at least partially removing the solvent initially present in this solution.

25. The process as claimed in one of claims 21 to 24, characterized in that the formulation applied to the surface during stage (A) comprises said block copolymer in a content of between 0.01 and 50% by mass, this content being expressed with respect to the total mass of the formulation.

26. The process as claimed in claim 25, characterized in that the formulation applied to the surface during stage (A) comprises said block copolymer in a content of between 0.05 and 10% by mass, this content being expressed with respect to the total mass of the formulation.

27. The process as claimed in claim 25 or 26, characterized in that the formulation applied to the surface during stage (A) comprises said block

copolymer in a content of between 0.1 and 5% by mass, this content being expressed with respect to the total mass of the formulation.

28. The process as claimed in any one of claims 21 to 27, characterized in that the deposited layer of block copolymer in the form of a continuous coat obtained in stage (B) has a thickness of between 10 nm and 1 μm.

29. The process as claimed in claim 28, characterized in that the deposited layer of block copolymer in the form of a continuous coat obtained in stage (B) has a thickness of between 40 nm and 600 nm.

30. The process as claimed in claim 28 or 29, characterized in that the deposited layer of block copolymer in the form of a continuous coat obtained in stage (B) has a thickness of between 50 nm and 500 nm.

31. The process as claimed in one of the preceding claims, characterized in that the block copolymer employed is as defined in one of claims 10 to 16.

32. The process as claimed in one of the preceding claims, characterized in that the block copolymer employed is obtained as the result of a controlled radical polymerization process preferably using, as control agent, one or more compounds chosen from dithioesters, thioethers-thiones, dithiocarbamates and xanthates, said polymerization being carried out in

an aqueous emulsion, so as to directly obtain the copolymer in the form of an aqueous or aqueous/alcoholic solution.

33. The process as claimed in one of claims 21 to 32, characterized in that the composition (F) is an aqueous dispersion of at least one polymer.

34. The process as claimed in one of claims 21 to 33, characterized in that the composition (F) is an organic solution of at least one polymer.

35. The process as claimed in one of claims 21 to 34, characterized in that the composition (F) is based on anhydrous mastic or polyurethane of at least one polymer.

36. The process as claimed in claim 35, characterized in that, in stage (B), the aqueous composition (F) is applied in the form of a continuous film to the deposited layer based on the block copolymer.

37. The process as claimed in one of claims 21 to 36, characterized in that, following the application of said composition (F) of stage (C), the surface covered by said composition (F) is subjected to a stage (D) for removal of the solvent phase present in the composition applied.

38. The process as claimed in one of claims 21 to 37, characterized in that the composition

(F) is an optionally silicone-comprising mastic composition, paint composition or adhesive composition.

39. A material, comprising a metal surface capable of being obtained according to the process of any one of claims 21 to 38.